VIEW FROM RAMTOP

With this year ending issue of TIMELINEZ, we are focusing our full attention to Bill Pedersen for his advancements & upgrades of our beloved TIMEXsinclair 2068 computers. Again, consult your inquiries to:

Mr. William J. Pedersen
1120 Merrifield S.E.
Grand Rapids, MI 49507
C/O The WIDJUP Co.

On another note: This package of TIMELINEZ is the last set mailed for the rest of 1989. The TIMELINEZ staff and family will be vacationing in Florida for several months. So, the next projected publication date is set for late January of 1990.

With all the holiday seasons approaching, the definition of each occasion is interesting:

- Halloween, short for ALL HALLOW EVEN, observed with merrymaking and the playing pranks by children during the evening.

- Thanksgiving, 1) the act of giving thanks 2) a prayer expressing gratitude 3) a public acknowledgment or celebration of divine good-ness (observed as a legal holiday: U.S., fourth Thurs-day in November / Canada, second Monday in October.

- Hanukkah, an 8 day Jewish holiday beginning on the 25th of Kislev and commemorating the rededication of the Temple of Jerusalem after its defilement by Antiochus of Syria.

- Christmas, 1) a Christian feast on December 25 or among the Armenians on January 6 that commemorates the birth of Christ and is usually observed as a legal holiday 2) the festival season from Christmas eve till after New Year's Day or especially in England till Epiphany.

- New Year's Day, 1) the 1st day of the year, a legal holiday in many countries 2) ROSH HASHANAH, the Jewish New Year observed on the 1st and by Orthodox and Conservative Jews also on the 2nd day of Tishri (the 1st month of the civil year or the 7th month of the ecclesiastical year in the Jewish calendar).

This service was brought to you by the Webster's Seventh New Collegiate Dictionary, Copyright © 1972.

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FRONT PAGE

PRINTED USING
sinclair QL
PROFESSIONAL
COMPUTER AND
THIS PROGRAM.

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DESK-TOP PUBLISHING
FOR THE SINCLAIR QL
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TIMELINEZ
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IMPROVED TS2068 INTERNAL ROM BYPASS

A major barrier to fixing the problems in INTERNAL ROM is one of access. Even though the ROM is socketed, you still have to open the case. This risks damage; and even then, replacing ROM with EPROM requires wiring modifications. This article shows how to replace HOME ROM and EXROM without touching a screw.

It is not necessary to replace ROM with EPROM. Battery backed up static RAM will do as well if equiped with a READ ONLY switch. That way the RAM can be written and then switched over to write-protect state. The saving in time over EPROM is impressive, however, you will probably elect to use EPROM once corrections have been made.

When expansion banks are connected, they assume priority by driving the BE (Bus Enable) signal low (using open collector gates). This is applied at the rear connector and sensed by the SCLD, which then shuts down all LOCAL memory (execept for display memory while it is using it). It includes ROSCS, EXROM and ROMCS signals which enable DOCK (cartridge), EXROM and HOME ROM (memory chips) respectively. DOCK and EXROM are not true expansion banks in the sense that they have lower priority than exernal BANK #0 and #254. The "missing" three banks in TIMEX documentation are not really missing at all. The much-touted BEU would have contained a new operating system using them.

The design presented here has very carefully retained the ability to attach a non-TIMEX BEU with expansion slots -- or any other system your heart might desire.

Many users will not initially have a back-plane with expansion slots. The preferred location for ROM bypass would seem to be the cartridge slot; however, locating it there desclosed a bug which involved BE signal conflict on rare occasions.

dandelion doodles...

by Gertrude Andersson

A few issues ago, TIMELINE2 asked for "utterly useless program", and this "Dandelion Doodles" or "Op Art For Pete's Sake" may be just what you're looking for. It's short and sweet; a great way to while away a lazy Sunday afternoon. There are lots of things you can do with it, and I'd like to see what other Sinclairists come up with.

```
10 REM ."DANDELIION DOODLES"
   . OR "OP ART FOR PETE'S
   . SAKE"

15 REM ..LOAD "OP"
       ..BY GERTIE ANDERSSON
       ..5/89

35 REM ..FOR DANDELIONS, GOTO
       ..100; FOR OP ART, RUN.

40 REM ..FOR A SPECIAL EFFECT
       ..ENTER "OVER 1" AS AN
       ..IMMEDIATE COMMAND.

45 REM ..SCREEN$ SAVES OKAY
       ..BUT OP ART DOES NOT
       ..PRINT OUT ON 2040
       ..PRINTER

50 REM ..CHANGE NUMBERS, ADD
       ..SOUND; BE CREATIVE,
       ..HAVE FUN!

80 FOR I=0 TO 21
90 PRINT "███████████████████
   ███████████": NEXT I
100 LET B=INT (RND*6)+1: REM..
                         BORDER
110 LET C=360: LET A=180
200 FOR J=1 TO 23: REM..NO. OF
                         DANDELIONS
210 LET HH=INT (RND*30)+10:
    REM ..SIZES OF DANDELIONS
220 LET VV=HH-(HH/6)

230 LET NS=INT (RND*14)+5: REM
                    NO. OF SPOKES
240 LET S=C/NS: REM ..STEP
250 LET INK=INK (RND*6)+1
260 LET X=INT (RND*(255-(HH+HH
    )))+HH
270 LET Y=INT (RND*(175-(VV+VV
    )))+VV
280 BORDER B
300 FOR I=0 TO C STEP S
310 LET H=HH*SIN (I*PI/A)
320 LET V=VV*COS (I*PI/A)
330 INK INK
340 PLOT X,Y     SEE DOODLES
                 NEXT PAGE..
```

doodles cont.

```
350 DRAW H,V: DRAW -H,-V
360 NEXT I: NEXT J
400 INK 0: OVER 0
```

JUST FOR FUN:

```
20 INPUT "x#:";b;"y#:";c;"st:"
;s
30 FOR a=0 to 360 STEP s
40 LET x=b*SIN (a*PI/180)
50 LET y=c*COS (a*PI/180)
60 PLOT x+127,y+87
70 NEXT a
80 GO TO 20
```

ROM BYPAS CONT.

HOME ROM BYPASS (See Figure 1)

HOME ROM is enabled by the SCLD using a signal named ROMCS. Unlike EXROM and ROSCS, this signal is not available externally.

Our task is to disable HOME ROM, and then enable an external equivalent.

The first is easy. Any time HOME ROM is being addressed, bus signal BE can be driven low. This suppresses ROMCS.

The second is a bit more complicated, but not difficult. HOME ROM is addressed whenever NOTHING ELSE is! It is a process of elimination.

HOME ROM is NOT being addressed when:

1. A14 or A15 is high
   (CHUNKS 2 thru 7 addressed)
2. EXROM is low
   (EXROM is addressed)
3. ROSCS is low
   (DOCK bank addressed
4. MREQ is high
   (NOP, I/O or INTERRUPT CYCLE)
5. BE is low
   (Expansion bank active)
6. RD is high
   (Write cycle in process)
7. RFSH is low
   (Applies to some static RAM)

What logic could be easier to implement?

Before attempting operating system revisions, a copy of existing code can be used in the bypass. This is an excellent

test of bypass circuitry. No change in operation should be detectable when a bypass card is present, or absent.

EXROM REPLACEMENT -See Figure 2b

EXROM presents an interesting problem. It is enabled by the EXROM signal (not BANK #254), but lack of complete internal address decoding results in false images occurring in all other chunks, not just CHUNK #0. If we had an expansion BANK #254, it would have higher priority than the internal chip -- but that requires a bank switching controller and usually a backplane.

The simple solution is to physically remove the EXROM chip from inside and remount it with full address decoding on a board. Though it is necessary to open the case, no wiring changes are needed and the chip can always be put back.

A tremendous advantage is gained when this is done. The false images are gone, making seven CHUNKS of EXROM available for use as either RAM or EXROM as desired. Again, this can be tested for no change in operation before and after the change.

EXROM BYPASS -See Figure 2A

Lacking a bank switching controller, it would seem impossible to use the BE signal to disable the internal EXROM chip and still have an external bypass take over. The presence of the EXROM signal from the SCLD would try to cancel itself, resulting in oscillation.

If the initial presence of EXROM signal can be latched on the bypass board, and then BE is switched low, this can be avoided.

NOW WE HAVE A WAY TO LEAVE THOSE SCREWS UNTOUCHED

We need to reset the latch before the next instruction comes along, when an external bank exerts priority, at power-up and REFRESH.

The extra cost of a safe approach might make the risk in removing the EXROM chip seem worth while. That is what Figure 2b is for. This is NOT RECOMMENDED unless you are a

ROM BYPASS CONT.

confirmed hacker!

BYPASS BOARD FEATURES AND OPTIONS

1. The FULL rear connector is repeated so other accessories can be used, including a bank switching controller and back plane.
2. Use two 28 pin sockets for "HOME ROM" and two for "EPROM". That way you can use RAM chips before burning EPROMS and then plug the EPROM chips in as direct replacements for RAM.
3. When using EPROM, a 27128 chip can be used for "HOME ROM", leaving one socket empty.
4. When using ROM for "EXROM", use 43256 chips for reasons of economy. (32K*8 bits)
5. "EXROM" memory from 0 to 32K is assumed to be 43256 "ROM" or 27256 EPROM.
6. Write-protect switches are used when RAM takes the place of ROM. One covers "HOME ROM", the other CHUNKS #0 thru #3 of "EXROM".
7. Other switches allow RAM to be initialized (written) before being configured as "ROM". This allows HOME ROM and EXROM to be copied to external RAM.
8. Jumpers are provided to eliminate battery backup once EPROMS have been installed in place of write-protected ROM.

Because bypass operations need BE to operate, and external banks have higher priority, the board must monitor BE' to avoid conflict. The circuit shown breaks into the BE signal line to make this possible.

The average user wants better operation, more memory, more gadgets and software which makes use of them. Who can blame them, but not everyone has the technical knowledge and skill to do it on their own.
The design presented here is hereby declared PUBLIC DOMAIN, with the blessings of The WIDJUP Co. Suppliers are free to manufacture, but it is strongly suggested that The WIDJUP Co. be consulted when doing so.

THIS BYPASS DESIGN STANDS ALONE

Nevertheless, RGB video, analog signals, external power sources, bus repowering and attachment of back-planes are features best located on the same board. Provisions for adding features would satisfy those not yet ready for slot expansion.

It is quite easy to copy internal ROM to the bypass board

```
10 REM Copying HOME ROM
20 FOR N= 0 TO 16383
30 POKE N, PEEK N
40 NEXT N

10 REM Copying EXROM
20 SAVE "EXROM" CODE 0, 8196
30 LOAD "EXROM" CODE 0, 8196
```

PROCEDURE	S1 SWITCH SETTINGS						NOTES
	a	b	c	d	e	f	
NORMAL OPERATION:							ROM/EPROM EPROM
"HOME":							0-8,8-16K; 0-16K
Using EPROM	ON	ON	OFF	—	—	—	(PGM High)
Using RAM as ROM	ON	ON	OFF	—	—	—	0-16K Read Only
"EXROM":							0-32,32-64;0-32K
Using EPROM & RAM	—	—	—	ON	ON	ON	32-64K RO/WR
Using RAM as ROM	—	—	—	ON	ON	ON	0-32K Read Only
EXROM Removed	—	—	—	OFF	na	na	0-32K Read Only
COPYING INTERNAL ROM							
HOME TO "HOME" RAM:	OFF	OFF	ON	—	—	—	Write Only 0-16K
EXROM TO "EXROM" RAM:	—	—	—	OFF	OFF	OFF	Write Only 0-8K
EXROM Removed	—	—	—	na	na	na	Done Externally
MAKING "ROM" CHANGES:							
"HOME":	ON	ON	ON	—	—	—	Read/Write 0-16K
"EXROM":	—	—	—	ON	ON	OFF	Read/Write 0-32K
EXROM Removed	—	—	—	ON	na	na	Read/Write 0-32K

The WIDJUP Co.

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1120 Merrifield S.E.
Grand Rapids, MI 49507

A SPECIAL MESSAGE TO MANUFACTURERS

This is directed to designers of DOS mass data storage systems and items like DS64 which appropriate the DOCK bank, thereby preventing packaged software--a potential money maker.

With this BYPASS, you are no longer trapped by barriers in LOCAL ROM code. You can do all the following things.

a. Isolate screen and printer routines.
b. VERIFY protect NEW, CLEAR, and RUN.
c. Restore OPEN, CLOSE, etc. as originally designed.
d. Pass paramaters freely.
e. Make use of NMI.
f. Implement interrupt MODE 2.
g. Implement DMA.
h. Toggle screen display mode (32/64, 40/80).
i. Implement tokens using keys presently invalid in GRAPHIC mode (This is the best way to get function keys and expand BASIC).

We are all aware of the problems created by barriers in the TIMEX operating system. It would be tragic if we repeated that disaster by all going our separate ways.

Variations in new operating systems are acceptable if they have a registered ID code, a compatible FUNCTION DESPATCHER, and will work with existing BASIC software and cartridges. Patches can always be developed for nonconforming machine code programs, making them better.

Beyond these requirements, a central coordination center should be set up for registration, compatibility approval, and to prevent general chaos.

REMEMBER! Compatibility with EXPANDED BANK SWITCHING is one of the most important features any new operating system will have. A non-TIMEX system has been developed by the WIDJUP Co. which gives support from adding megabytes of memory to an unexpanded TS2068, to a full auto configuring system with ROM code modifications and smart chips.

The minimum system has been made public domain. Advanced system licensing will be available at 8% of net sales, or you can decide to try it on your own. It will by YOUR committee.

Bill Pedersen
(Dr. Strange-quark)

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Volume 8, Number 6 and 7/8
June and July/August 1989

1989 June 09 16:03:28	1989 Aug 08 15:08:43
Flp1_sn896_lis	Flp2_sn8978_lis
SF890609.1600;; Words_1577;;	SF890808.1435;; Words_1569;;
SincLink;; Newsletter;;	SincLink;; Newsletter;;
Filename_sn896 (Sn895)..	Filename_sn8978 (Sn896)..

For contact	(c) Copyright 1989 SincLink..
SincLink..	May be freely copied for non-
c/o Bill Miller 408-253-3175	commercial use only..
6575 Clifford Drive	Please give credit to author
Cupertino, CA 95014-4530	and source..

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5. QL Print Multiple Column	5. SLIX Newsletter Exchange
program (Pmc_bas)..	Scan (Sx8978B)..
6. Harrisburg Area Timex	6. SLIX contacts and newslettr
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7. Harrisburg Area Timex	11. SincLink Subscriber List &
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May 1989 (Rn895)..	11. SincLink Information..

|			
Sn 88_files;;..		Sn8978_files;;..	
0Filename_ext Bytes..		0Filename_ext Bytes..	
0———— —— ——..		0———— —— ——..	
		Sn8978_dir..	
Sn896_dir	8152..	Sn8978_lis	5541..
Sn896_txt	12060..	Sx8918B_lis	19093..
Sc8905_txt	29694..	Sc8907_lis	15927..
Sx8918B_txt	18630..	TIMEXUI6_JED	2272..
Pmc_bas	3193..	TIMEXUHO_JED	2272..
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Rn895_txt	10240..	TIMEXUHO_PL2	649..
..		MENU_SYS	134..
Sn895_dir	19386..	Sc8906_lis	23675..
Sn895_lis	15452..	Rn898_lis	7852
Sc8904_lis	35548..	Rn897_lis	5541..
Sx8918B_lis	21440..	..	
Sx8918p0_lis	3484..		
Ss8950Ba_lis	12086..		
Ss89017a_lis	5289..		
Ss89118a_lis	29497..		
Ss8940Ha_lis	48866..		
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..			
Sn893_dir	80762?..		
Sn893_lis	13354..		
Sc8902_lis	35888..		
Sx8918B_doc	21376..		
Sn88_doc	6144..		
Rn891_lis	21254..		
..			

* Disclaimer; SincLink and Authors disclaim responsibility for the results of hardware modifications to your computer system.. If you are not SURE of your capabilities, get someone with more experience to help you....

Figure 1: HOME ROM Bypass
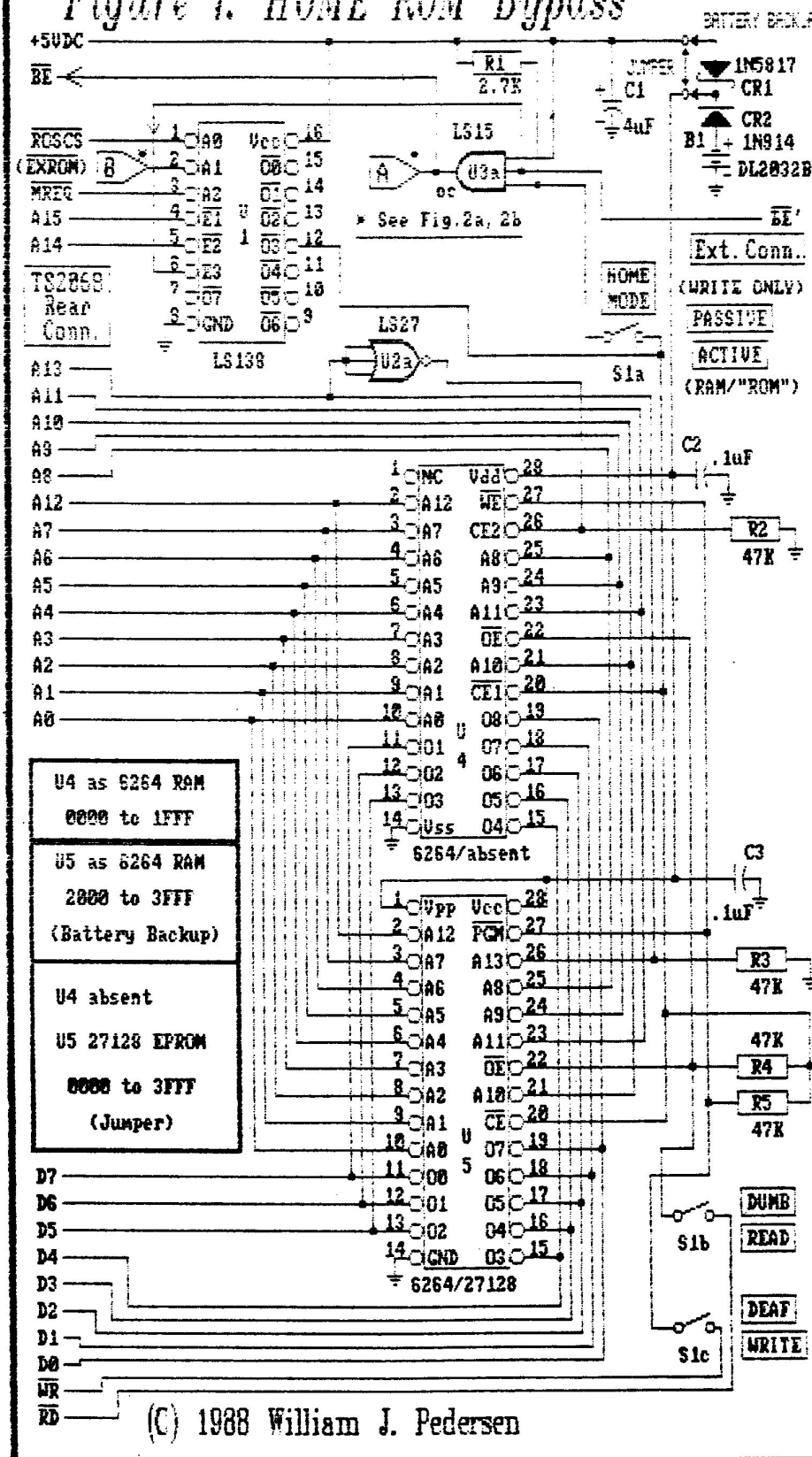
(C) 1988 William J. Pedersen

Figure 2a: EXROM Bypass

Figure 2b: EXROM Replacement

(C) 1988 William J. Pedersen   (NOT RECOMMENDED)
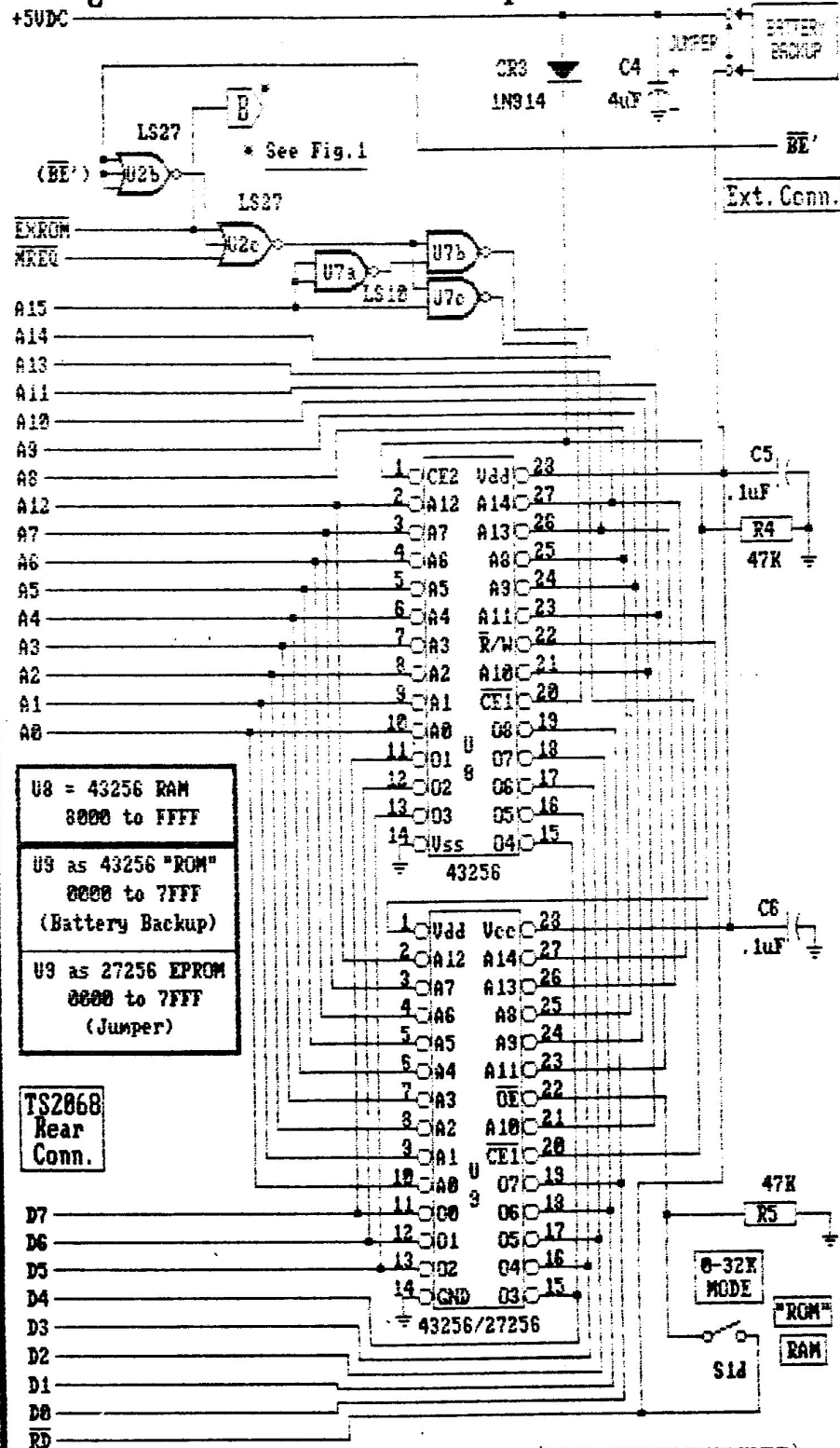
QL SYSTEM VARIABLES
By LT Tim Swenson

Looking through a book on QL assembly language I noticed that it had a list of system variables in the back of the book. Having found lots of uses for system variables on my T/S 1000 and 2068, I looked through the system variables to find some that might be of use. Below is a short list of some of the variables that I found interesting. The address is listed along with the size of the variable and some notes on it.

RAMTOP+1 : 163872 Long. Gives ramtop+1 so you can tell if system has been expanded.

SCREEN(TV) : 163890 Byte. Value of 0 if not set up in TV mode. Value of 2 if set up in TV mode.

SCREEN STATUS : 163891 Byte. Value of 0 if screen active. If not =0 then all output is halted until a key is hit.

NET # : 163895 Byte. Holds the Network number for the system. Default is 1.

REPEAT DELAY : 163980 Word. This gives the delay between the time a key is first hit and before it is repeated. The lower the number the shorter the delay. A value of 1 is almost impossible to use. A big number will give you almost no repeat.

REPEAT FREQ. : 163982 Word. Rate at which a key repeats. A value of 1 repeats a key fast. Good for moving cursor fast while editing a basic line. Try poking a 1 to it.

CAPS LOCK : 163976 Word. A value of -1 means caps lock is on, 255 means caps lock is off. (In a previous Timelinez article it was wrong).

And as a reminder, the way to get the amount of free memory available is : PEEK_L (163856) − PEEK_L (163852) − 512. This subtracts the base of the free area from the base of the basic area. The further subtraction of 512 is for a slave block.

For new users of the QL, to poke or peek a number to a Long address use POKE_L and PEEK_L. For a Word address use POKE_W and PEEK_W. For a Byte address use POKE and PEEK.

FAST BANNER$
BY GEORGE MOCKRIDGE

The paper size of the 2040 printer is ideally suited for constructing large banners for use at parties, meetings, gatherings, etc. The best 2068 banner program I ever used was part of Bob Orrfelt's word processor titled WP32.

This program would produce any size message horizontally in 1" or 2.5" letters. The only drawback was speed. The time required to form each letter was agonizingly slow.

The following 2068 code is reproduced from the banner section of WP32 in a form that can be compiled using TIMEMACHINE. I think you will find it much faster. Many thanks to Bob Orrfelt for permission to reproduce this section of his program.

```
   1 REM ! OPEN #
   5 GO TO 7000
 900 CLS : PLOT 0,0
 910 DRAW 0,175: DRAW 255,0
 920 DRAW 0,-175: DRAW -255,0
 930 RETURN
7000 GO SUB 900: REM BANNERS
7010 PRINT AT 1,7;"** BANNERS *
     *"
7020 PRINT AT 3,4;"1. 1"" HIGH
     BANNER"
7030 PRINT AT 4,4;"2. 2.5"" HIG
     H BANNER"
7050 PRINT AT 20,1;"SELECT 1, O
     R 2"
7100 LET I=CODE INKEY$
7110 IF I<49 OR I>50 THEN GO TO
     7100
7120 IF I=CODE INKEY$ THEN TO T
     O 7120
7140 CLS : INPUT "ENTER BANNER:
     ";U$
7150 LET Y=PEEK 23675+256*PEEK
     23676
7160 LET Y$="" : LET Z$=""
7200 FOR N=1 TO LEN U$
7205 DIM U(8) : DIM V(8)
7210 LET A=15360
7220 IF CODE U$(N)>143 THEN LET
     A=Y-8*144
7230 LET A=A+8*CODE U$(N)
7240 FOR M=0 TO 7
7250 LET U(M+1)=PEEK (A+M)
7260 NEXT M
7300 LET C=128
7310 FOR M=1 TO 8
7320 LET X=128
7330 FOR O=8 TO 1 STEP -1
```

```
7340 LET E=V(O) : LET F=INT (E/C)
7350 LET V(M)=V(M)+X*F: LET V(O)
     =V(O)-C*F
7360 LET X=X/2
7370 NEXT O
7400 LET C=C/2
7410 NEXT M
7500 FOR M=1 TO 8
7520 LET C=128: LET E=V(M)
7530 LET X$=""
7540 FOR P=1 TO 8
7550 LET F=INT (E/C)
7555 IF F=1 AND I=49 THEN LET X$
     =X$+" "
7560 IF F=1 AND I=50 THEN LET X$
     =X$+Y$+V$(N)+V$(N)+V$(N)+V$
     (N)+Z$
7565 IF F=0 AND I=49 THEN LET X$
     =X$+" "
7570 IF F=0 AND I=50 THEN LET X$
     =X$+" "
7580 LET E=E-C*F: LET C=C/2
7590 NEXT P
7600 LPRINT X$
7610 IF I=50 THEN LPRINT X$
7620 NEXT M
7630 NEXT N
7700 GO TO 7000
```

THE CHAOTIC RETURN
BY MARK WAHL

In responce to an earlier plea to correct the chaotic program for the QL, below is my attempt. When running a SLOW program that draws a picture of some mathematical equation (ie, Mandelbrot set), I do not like watching it start drawing at the upper left corner of the screen and work its way down a line at a time. In this program, the value of R is random. That way the entire structure is visible before all the details are filled in.

I changed the POINT command to a BLOCK command because the physical coordinate system is easier to use than the graphic coordinate system in this situation.

Chaos4_bas

```
100 WINDOW #1;512,256,0,0
120 CLS
130 REPEAT r1
140 r=3+RND : r1=512*(r-3)
160 x=.3
180 FOR i=1 to 200 : x=r*x*(1-x)
190 FOR i=1 to 300
200 x=r*x*(1-x)
210 BLOCK 1,1,r1,(206-200*x),0
220 NEXT i
230 END REPeat r1
```

CHAOS PROGRAM #2 FROM
SCIENTIFIC AMERICAN

```
100 REMark Chaotic mapper
120 REMark 880117, 890611
130 WINDOW 256,256,256,0
140 PAPER 0 : INK 7 : CLS
150 SCALE 4,-2,-2
160 LET a=2.24 : LET b=.43
170 LET c=-.65 : LET d=3.4
180 LET x=0 : LET y=0 : ox=0 :
    oy=0
190 REPeat chl
200 ox=x : oy=y
210 LET xx=SIN(a*y)-COS(b*x)
220 LET y=SIN(c*x)-COS(d*y)
230 LET x=xx
240 md=SQRT((ox-x)^2+(oy-y)^2)
250 IF md<1 THEN INK 7
260 IF md>1 AND md<2 THEN INK 5
270 IF md>2 THEN INK 3
280 POINT x,y
290 END REPeat chl
```

HERB BOWERS, SR.
2588 WOODSHIRE CIRCLE
CHESAPEAKE, VIRGINIA 23323

11 July 1988

Andy Hradesky, editor
TIMELINZE/Sinclink
PO Box 1312
Pacifica, CA 94044

Dear Andy,

Enclosed is a LLISTing for my MEDICARE INCOME TAX CALCULATOR program.

If you would care to publish this in your newsletter you have my blessing.

At this time my production company, A*B*B*A SOFTWARE, no longer supports the TIMEX/SINCLAIR family of computers and all programs published up to this date are placed in the public domain.

I will however, from time to time write a program which will be submitted to UG newsletters for publication.

I have a conversion of this MEDICARE ITC available for the T/S 1000/1500 and the PC8300 and will send a LLISTing to anyone for a SASE.

This program is being submitted to all other known newsletters and publications.

Sincerely,

Herb Bowers, Sr.

0>REM Medicare Income Tax
            by Herb Bowers, Sr.
                071189

    1 REM Starting with your 1989
returns, all individuals eligi-
ble for Part A Medicare benifits
will be subject to a tax "sur-
charge" if thier tax liability
exceeds $150. The amount of the
surcharge will be based on tax
liability, with a maximum tax of
$800 for 1989.
    2 REM If you are ELIGIBLE for
Part A coverage, the surcharge
will apply; you may not avoid
the tax by waving Medicare beni-
fits. Those eligible for Part A
coverage include ALL individuals
age 65 or older and other young-
er disabled persons.
    3 REM The tax will not apply
in the first year you become el-
igible unless you are eligible
for more than 6 months of the
year.
    4 REM If both you and spouse
are eligible for Part A the an-
nual tax ceilings are doubled.
    5 REM If only one spouse is
eligible and a joint return is
filed, the limit applies but the
tax is based on 50% of the joint
return liability regardless of
which spouse earned the income.
    6 REM   TAX CEILINGS
            1989 $800
            1990   850
            1991   900
            1992   950
            1993   1050
    7 REM Filing seperate returns
will not reduce the liability.
Unless spouse live apart for the
entire year, the tax ceiling in
1989 for each spouse on a seper-
ate return is $1600, rather than
$800 making the maximum possible
tax $3200. If only one spouse is
eligible both are treated as el-
ibible on seperate returns; the
$800 ceiling applies.
    8 REM This short 2K program
will quickly and accurately cal-
culate the MEDICARE TAX for you.
TO USE: Simply enter your tax
liability from your 1988 income
tax return or enter the amount
of your estimated 1989 tax lia-
bility.
    9 REM The IRS will publish a
table to be use for the calcula-
tion of the tax but in the mean-
time you can determine the tax
for yourself.

```
  10 DEF FN a(f)=tax/150*r(f)
 100 DATA 22.5,800,37.5,850,39,
     900,40.5,950,42,1050
 110 POKE 23658,8: POKE 23609,10
 120 CLS : LET q=0: LET t=0
 130 DIM r(5): DIM s(5)
 140 DIM t(5)
 150 FOR f=1 TO 5
 160 READ r(f),s(f)
 170 NEXT f
```

```
1000 PRINT "MEDICARE INCOME TAX"
1010 PRINT '"WHAT'S YOUR FILING
     STATUS? (1-5)"
1020 IF INKEY$="" OR INKEY$<"1"
     OR INKEY$>"5" THEN GO TO 1020
1030 LET fs=VAL INKEY$: PRINT ,f
s
1040 IF fs<>2 AND fs<>3 THEN
     GO TO 1160
1050 PRINT '"DO BOTH YOU AND SPO
USE QUALIFY  FOR MEDICARE, PART
A ? (Y/N)"
1060 IF INKEY$="" OR INKEY$<>"Y"
     AND INKEY$<>"N" THEN GO TO
     1060
1070 LET q=INKEY$="Y"
1080 PRINT ,"YES" AND q;"NO" AND
     NOT q
1090 IF fs=2 THEN GO TO 1160
1110 PRINT '"DID YOU AND YOUR SP
OUSE LIVE TO-GETHER AT ANY TIME
DURING YEAR ?"
1120 IF INKEY$<>"" THEN GO TO
     1120
1130 IF INKEY$="" OR INKEY$<>"Y"
     AND INKEY$<>"N" THEN GO TO
     1130
1140 LET t=INKEY$="Y"
1150 PRINT ,"YES" AND t;"NO" AND
     NOT t
1160 PRINT '"ENTER TAX LIABLILTY
     FROM YOUR   LAST FEDERAL INCOME
     TAX RETURN"
1170 INPUT tax: PRINT ,"$";tax
1180 INPUT "IS THE ABOVE CORRECT
?", LINE q$
1190 IF q$(1)="N" THEN RUN
1200 FOR f=1 TO 5
1210 IF t OR q THEN LET s(f)=
     s(f)*2
1220 NEXT f
1230 IF fs=2 THEN LET tax=tax/2
1240 FOR f=1 TO 5
1250 IF tax<150 THEN GO TO 1290
1260 LET t(f)=FN a(f)
1270 IF (fs=2 AND q) OR t THEN
     LET t(f)=t(f)*2
1280 IF t(f)>s(f) THEN LET t(f)=
     s(f)
1290 NEXT f
1300 CLS
1310 PRINT 'TAB 5;"MEDICARE INCO
ME TAX"
1320 PRINT 'TAB 5;"YEAR";TAB 21;
"TAX"
1330 FOR f=1 TO 5
1340 IF t(f)>s(f) THEN LET t(f)=
     s(f)
1350 PRINT ''TAB 5;f+1988;TAB 20
     +(t(f)<1000)+(t(f)<100)+(t
     (f)<10);INT t(f)
1360 NEXT f
1370 PRINT AT 21,3;"█OPY    █O AN
OTHER   █UIT"
1380 IF INKEY$="C" THEN PRINT AT
     21,0;TAB 31
     : COPY
     : GO TO 1370
1390 IF INKEY$="D" THEN RUN
1400 IF INKEY$="" THEN GO TO
     1370
1410 STOP
9999 CLEAR : SAVE "medicaretx" L
INE 100: SAVE "medicaretx" LINE
100: SAVE "medicaretx" LINE 100:
 VERIFY "": VERIFY "": VERIFY ""
```
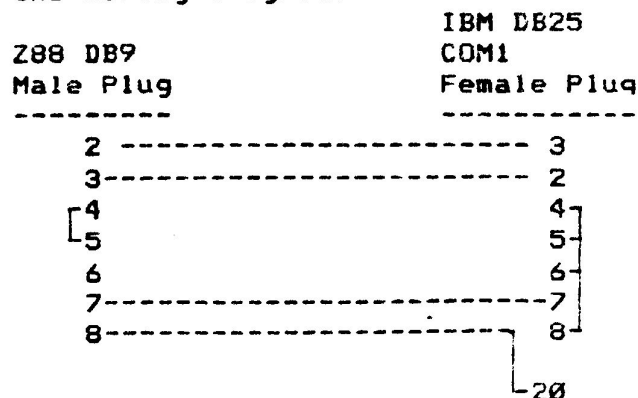
Z88 TO IBM OR 2068 CABLE

I have been busy trying to get all my computers to talk to each other over RS232. I made a Z88 to QL cable a few months ago and it works well. It works so well that I store backups of all my Z88 files on a QL disk.

We have IBM PCs at work. I want to try and see how the Z88 communicates with the IBM. That is by using a homemade cable and not the ready made IBM Transfer package.

After some research and some trials and tribulations, I came up with a Z88 to IBM cable. Here is the wiring diagram:

```
                              IBM DB25
                              COM1
Z88 DB9                       Female Plug
Male Plug
---------                     -----------
     2 ----------------------------- 3
     3----------------------------- 2
   ┌4                             4┐
   └5                             5┘
     6                             6┐
     7----------------------------7
     8------------------------┐   8┘
                              └20
```

I tested this cable out with the IBM and it works fine. I used PROCOMM on the IBM. You can type on the Z88 and it will appear on the IBM screen. Type on the IBM and it will appear on the Z88 screen. You can also transfer files by ascii and it works without any problem.

This same cable also works in connecting the Z88 to the 2068 using a Z-SIO interface. Just connect it to the end of your modem cable.

The cable also works in connecting the QL SER2 to the 2068 Z-SIO interface. I was using Specterm 64 on the 2068 and Q_Link on the QL. I also transfered files back and forth between the two machines with xmodem.

If you are going to use this cable with the QL, the jumper on pins 4 and 5 of the DB9 is not needed. But the Z88 does require it. Also jumper pin 1 to pin 7 on the QL DB9.   -David Bennett

• MICRODRIVES SHORTAGES COMING

For those of you that don't get QL World, I will pass along

the following information from the June, 1989 issue concerning microdrives: "Ablex, the company which has made the tape cartridges since the start, reports that supplies of suitable magnetic tape from German comms giant BASF may dry up. Even if stocks are found, says production manager David McSorley, Ablex will not make microcassettes after 1989." For those that haven't converted over to disk drives, the info above should be the push needed to make the change. If you do convert, perhaps you ought to consider going with 3 1/2" drives. I can think of 4 reasons to do so:

1. Programs from the UK (where most come from) that cannot fit on a microdrive cartridge will be contained on 3 1/2", not 5 1/4", disks.

2. They are quieter and seem to operate more reliably.

3. The cost of the drives is down to the $75-85 range and the disks are 59 cents each from MEI (800-634-3478).

4. Most drives are sold with adaptor kits that allow you to mount them in 5 1/4" drive cases.

AN UNSOLICITED PLUG-- If you have a ZX/TS on the sick list, there is someone who will fix it -- Dan Elliott of Promise Land Electronics. I cannot recommend his work highly enough; very fast and VERY reasonable. He recently put a 2068 of mine back together for $25 that I had given up on. He does upgrades and custom building as well as repair. You can reach Dan at Rt. 1, Box 117, Cabool, MO 65889, (417) 469-4571 weekends, and (314) 739-1712 evenings, Sunday through Thursday.

From the July/August '89
Toronto Sinc-Link N/L.

THE LATEST FROM S.N.U.G.

The national meeting was held at 7pm on Saturday May 6th 1989. About 35 SNUG members attended. Mel Nathanson was sick and unable to attend so the very able Frank Davis served as the spokesperson for SNUG.

The following is a synopsis of what went on.

Election Results - Sixty-seven ballots were mailed with forty-three returned by the deadline. The vote count was as follows:

President - Mel Nathanson
First VP - Paul Holmgren
Second VP - Basil Wentworth
Secretary - Audeey Curnutt
Treasurer - John Cushran

Congratulations to all those who were elected and many thanks to those who ran but weren't elected. Better luck next time. Thank you for your dedication to making SNUG and the whole Sinclair community a viable entity. If you are unaware of who was running here are all the candidates, with the names of all who withdrew removed.

President - Joan Kelly, Gary Lessenberry, and Mel Nathanson.

First VP - Alex Burr, David Hartman, Ted Hechman, Paul Holmgren, and Donald Lambert.

Second VP - Frank Davis, Ruth Fegly, Laurie Futrell, Frank Orosz, and Basil Wentworth.

Secretary - Mike Bowers, Audrey Curnutt, Andrew Hradesky, Gary Lessenberry, and William Wood.

Treasurer - Chris Crawford, John Cushran, and Ken Frankel.

Thanks again from SNUG.

From the August '89 Plotter N/L.

CATALOG ON DISK?

That's right! RMG now offers the Larken users of the world their complete catalog on disk in Larken format using TASWORD II word processor. If you can make use of this, you should get in contact. They are also offering a monthly mailing of catalog updates and information for all TS users. These monthly mailings will include AT LEAST 3 public domain program per year-READY TO RUN! All this at only $3 for the catalog and $12 (inside continental U.S. only) for the 12 monthly disk mailings. You also get a total of $8 in coupons when you order both.

From the August '89 CATS N/L.

From: H L SCHAAF Re: Timachine

Found a fix for the bug in Timachine, change POKES in Line 106 from 32880 to 33880.

From: Gerald Lindsay; hippo Re: Z88 BBS

Hi, I'm Gerald Lindsay, I'm starting a BBS for Z88 users, which will be online in about 10 days. There will be about 200 files/programs for the Z-88, and hopefully a lot of input from throughout the East Coast, since the next closest BBS in in CA. I will leave a message here once the BBS is up, but please leave me a message if you're interested, as I'm trying to guage local support. BBS will run Wildcat, and support 300/1200/2400 and MNP5, and will operate 24 hrs a day. It will be open to all, with practically no upload/download limits until there is somewhere else to get programs. Thanks for your time. (SEE RELATED MESSAGE BELOW)

From: Gerald Lindsay Rm: ZED-88 BBS

The ZED-88 BBS is open in BETA test mode at this time. The number is 703-968-9433 (VA metro), and is up most days at this time. There is no message base as such so far but there are some Z-88 files and programs available at this time (about 80 or so) and more on the way. The board won't officially open till August 1st, but please stop by and help me debug this sucker. Only the Z88 is supported, I'm afraid, but if your just interested, stop on by.

POTENTIAL NEW MEMBERS

PLEASE COMPLETE THIS INTEREST CARD BELOW AND SEND YOUR $15.00 MEMBERSHIP WITH YOUR CHOICE USER GROUP TO:

AMERICAN MICRO SYSTEMS
2175 Abera Road #262
San Jose, CA   95121
(408) 270-9730

MEMBERSHIP INCLUDES FREE ACCESS TO THE PDSE LIBRARIES AND A ONE YEAR SUBSCRIPTION TO **TIMELINEZ**.

USER GROUP MEETINGS ARE ALWAYS OPEN TO THE PUBLIC AT NO CHARGE. GUESTS ARE HIGHLY ENCOURAGED TO ATTEND.

HAPPY COMPUTING......THE EDITORS

NAME:_____

ADDRESS:_____

CITY:_____STATE:____ZIP:_____

PHONE:_____WORK#:_____

HOW DID YOU HEAR ABOUT US?
    FEST_____COMPUTER STORE_____

    NEWSPAPER/MAGAZINE_____

    MEMBER/FRIEND_____

Mini File Server BBS
Supports: 300/1200 baud at 8,N,1
Password: "fishwyfe"
Sysop: Steve Nichols
Phone#:   (408) 253-2295

Netware Divisions
Supports: 300/1200/2400 baud at 7,1,E
Terminal: VT52
Sigop: Kevin Lueng
Phone#:   (415) 753-5265

NOTE: The Mini File Server BBS has been supporting the Unix files system since it's start. It is strickly an U/D load BBS via X-modem or ASCII. For further information, please contact Bill Miller.

T S C Sig T C W TIMEXsinclair Cambridge S.I.G.
The Computer Workshop
558 Cypress Avenue
Sunnyvale, CA 94086
(408) 739-3977

SIG Host: Mark Wahl

Meetings: Every Saturday morning at 9:00 am
            Stanford University
            Jordon Hall (in the Quad)
            Room 380C (downstairs)

Dates: December 2, 9, 16, 23, 30, 1989
            January 6, 13, 20, 27, 1990
            February 3, 10, 17, 24, 1990

LogOn Unlimited Bulletin Board System
TIMEXsinclair SPECIAL INTEREST GROUP (SIG)

SAN MATEO
Message base #10 - PDSE Library on Directory #50
300/1200 baud - 8,N,1 - 7 phone lines - 24 hours
(415) 571-6911 - PC Pursuit available.
SIG OP: Kevin Leung

SUNNYVALE
Message base #17 - PDSE Library on Directory #50
300/1200 baud - 8,N,1 - 7 phone lines - 24 hours
(408) 745-0000 - PC Pursuit available.
SIG OP: Mark Wahl

P U G Peninsula User Group
311 Michelle Lane
Daly City, CA 94015
(415) 878-1773

President: George Mockridge
Host: Walt Johnson

Support for:
-TIMEXsinclair's 1000/1500/2068
-Cambridge Z88
-Sinclair's Spectrum +128K and QL

Meetings: Third Sunday of each month, 1:30 pm
           Peninsula Hospital
           1783 El Camino Real
           Burlingame, CA

Dates: December 17, 1989   February 18, 1990
           January 21, 1990   March 18, 1990

T S C V U TIMEXsinclair Cambridge Silicon Valley Users
6675 Clifford Drive
Cupertino, CA 95014
(408) 253-3175

Host: Bill Miller

Meetings: Third Wednesday of each month - 7:30 pm
           Cupertino Library   Bring your equipment
           Community Room   down access ramp
           10400 Torre Avenue   Leading to bottom of
           Cupertino, CA 95014   circular building

Dates: December 20, 1989
           January 17, 1990
           February 21, 1990

TAS-BAM, INC. Tampa and Suncoast Bay Area Micro-computer Users' Group, Inc.
5956 46th Avenue North
Saint Petersburg, FL 33709
(813) 546-4278

Hosts: Eric Best, George Featherman, Warren Reed

Meetings: Second Saturday of each month, 7:30 pm
           Beach Federal Savings and Loan
           7777 North Seminole Blvd.
           Seminole, FL

Dates: December 9, 1989
           January 13, 1990
           February 10, 1990

PERIPERALS & HARDWARE

IBM EMULATOR $172.44
Allows your QL to run IBM PC software.
All you need is added memory and disc
drives. Now you can run dBase III,
Lotus 123, XTreePro, Multimate, etc.
SEE BP's DESCRIPTION SHEET WITHIN THIS
CATALOG.

TRUMP CARD $312.44
256K RAM version which includes:
 - Super Toolkit II by Tony Tebby
 - Imaging screen dump
 - Printer spooler buffer-limit of RAM
 - Disc drive interface (for 2 drives
   3", 3 1/2", 5 1/4"-40 or 80 track)
 - RAM Disc (both static and dynamic),
   add DRAMs for 512K or 796K.

XCHANGE $ 68.94
The ultimate upgrade of the Psion
software. All 4 programs in 1 multi-
tasking program. Many added commands
to each one. Must have disk drives,
at least 512K RAM, and Toolkit II.

SCANNER $275.94
Plugs up to any Epson compatible
printer. Your printer can load
pictures into the QL. Comes complete
with software.

MODAPTER $ 68.94
Will connect to any standard 300/1200
baud modem. Files can be up/down
loaded. Comes with QCODE ver. 5.0
terminal software.

D.A.S. $114.99
Stands for DATA ACQUISITION SYSTEM.
This will allow use of 24 lines of
programable I/O, 12 Bit counter, 8
Channel / 8 Bit A-D converter. Plugs
into the expansion port.

ROM UPGRADE $ 48.24
This one EPROM replaces both ROM chips
inside the QL. It reduces power
consumption by 20%, and drops the
temperature of the heat sink by up to
50 degrees F. One of the following
programs can be burned on the New ROM
ONLY if you own the program.
 ‡ Icon Controlled Environment-I.C.E.
 ‡ Qflash
 ‡ Super Toolkit II
 ‡ QL ROM - JSU, JS, UKMG, USMG/SJMG

30 MEGABYTE HARD DRIVE WITH AT-506 CONTROLLER INTERFACE
From the same company that introduced
the Trump Card, Miracle Systems, Ltd.
Hard drive will plug into the ROM
expansion port. Available towards the
end of January 1990. Call or write
for more details.

```
 0                                              0
 0         AMERICAN MICRO SYSTEMS              0
 0             2175 Aborn Raod                 0
 0               Suite 262                     0
 0          San Jose, CA 95121                 0
 0                                             0
 0                         November 3, 1990    0
 0                                             0
 0   Dear Customer:                            0
 0                                             0
 0   We are happy to bring to you our 1989/1990 0
 0   Sinclair QL and Cambridge Z88 catalog. It has 0
 0   been almost two years since publishing our 0
 0   last, however, with the surge of new products 0
 0   in the Sinclair world, the time has come to 0
 0   renew our commitment.                     0
 0                                             0
 0   All of our products are fully warrantied either 0
 0   by A.M.S or by the manufacturer. We also offer 0
 0   extended warranties on our QL computer line. 0
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 0   It is our desire to serve you with the upmost 0
 0   efficiency and professionalism. Please feel 0
 0   free to contact us to ask any questions or to 0
 0   give suggestions concerning our product line. 0
 0   REMEMBER: We are here to serve you, the   0
 0   customer, not the other way around!       0
 0                                             0
 0                   Sincerely Yours,          0
 0                                             0
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```

sinclair																	
F1	0	1	2	3	4	5	6	7	8	9	0	-	=	£	\		
F2	ALT	Q	W	E	R	T	Y	U	I	O	P	[	]				
F3	CAPS	A	S	D	F	G	H	J	K	L	;	'	ENT				
F4	SHIFT	Z	X	C	V	B	N	M	,	.	/	SHIFT					QL
F5	CTRL	←	→							↑	↓	ALT					

The Revolution Continues...

THE SINCLAIR QUANTUM LEAP	With the Sinclair QL you have a computer system that is easy to use, easy to understand and easy to apply to your everday needs. The Sinclair QL can help you do your taxes, balance your checkbook, and keep track of stocks and bonds. It can do cash flow analysis, help plan your family budget, serve as an adjunct to a business computer and much, much more. Its use and application in your daily life lets you stay on top of today's ever-changing world and the even greater complexities that tomorrow may bring.
A PERSONAL COMPUTER SYSTEM FOR YOUR ENTIRE FAMILY.	

SINCLAIR QL

PROFESSIONAL COMPUTER SYSTEM

> 128K RAM, expandable to 896K.

> 48K ROM, containing SuperBasic and Qdos, expandable to 64K by ROM cartridge.

> Motorola 68008 CPU, running at 7.5 MHz. (a 32-bit processor). 1 megabyte of address space is available (1000K)!

> Intel 8049 co-processor controls keyboard, sound, RS-232 serial ports, and real-time clock. Upgrade Intel 8749 chip is used with IBM AT style 101/102 enhanced keyboard

> Four Sinclair designed custom chips control Microdrives, local area network (dual - up to 64 online), and more.

> High resolution graphics with monitor, TV (color or B&W) in two modes: 512 x 256 pixels (4 colors), and 256 x 256 pixels (8 colors).

> Character display, up to 85 across by 25 down, choice of character sets, TV format allows 40 to 60 across, depending on software.

> Machine: weighs less than 4 Lbs.
  Dimensions: 5 3/8" x 1 3/4" x 18 3/4".

> Two RS232-C communications interfaces for modems, printers, etc. Transmission rates from 75 BAUD to 91,200 BAUD, full duplex transmit/receive at seven BAUD rates up to 9200 BAUD.

> Local Area Network LAN: Connect up to 64 QL's together, transmission through network, 100K BAUD!!

> 9 Expansion ports: internal, microdrive, ROM cartridge, serial (2), local area network (LAN)(2), joystick (2).

> One megabyte address space is available for almost unlimited potential for expansion.

> ROM cartridge, accepts one cartridge up to 16K.

> The QDOS operating system:
  - FULL multi-tasking abilities
  - time sliced priority job scheduler
  - multiple independant screen windows

> Sinclair SuperBasic:
  - procedure structure (like Pascal)
  - interpretation speed is independant of program size
  - operating system facilities accessible from BASIC
  - equal capability for strings & arrays
  - full error handling facilities
  -sound.....AND MUCH MORE!!!

The QL also has 2 built-in microdrives, a REAL keyboard, 400 page user guide in a loose leaf-binder, and it comes complete with 4 FREE super programs:

Quill — a full featured word processor, with type appearing on screen exactly as it will appear on paper, including underlines and different typestyles.

ABACUS — A spreadsheet program for business or household applications, up to 256 rows is available.

ARCHIVE — an extremely powerful database filing system. Best example is DBASE III.

EASEL — which allows easy creation of charts; pie, line, bar, mixed line & bar, and more! This is an excellent graphing program for business. All four of these programs have met rave reviews..."EASEL by itself would justify the purchase of a QL"... David Ahl of Creative Computing;"The QL with the bundled software is NO TOY!! For business, it's in the same league as the Amiga's and the Atari ST's! Don't let the low price fool you!" ...Joe Newman of Variety Sales.

ONLY $129.00!

PERIPHERAL & HARDWARE CONT.

CUMANA DISK INTERFACE   **$149.44**
With this module, you will be able to connect
disc drives to your unexpanded/expanded QL.

SERIAL TO PARALLEL I.F.   **$ 63.19**
Connects to serial port 1 (SER1_) and will allow
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SCHON PC STYLE KEYBOARD   **$204.94**
Comes complete with interface. Full size IBM
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ing required.

ROM EXPANSION BOARD   **$ 94.45**
Gives the ability to connect up to 4 EPROMS on
your QL and use ALL of them at the same time.
You can work with SpeedScreen, Qflash, Super
Toolkit II, and ICE simultaniously.

I.C.E. MOUSE   **$137.94**
Also known as "MICE". Gives mouse capabilities
within the I.C.E. environment.

QUIMI MOUSE   **$160.94**
Qjumps version which is supported by Qram multi-
tasking front end environment. Upgrades include
a battery backup (rechargeable) so you may never
loose track of date and time.

QL MINI (with software)   **$160.94**
For the musically inclined.

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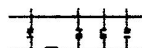
QL MOTHER BOARDS   **$ 24.94**

KEYBOARD MEMBRANE MATRIX   **$ 24.94**

MICRODRIVE UNIT   **$ 12.44**

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I.C. CHIPS:

ULA ZX-8301	$ 34.44
ULA ZX-8302	$ 28.75
MAB 8049	$ 12.44
CPU MC68008	$ 12.44
JSU ROM SET	$ 18.69

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MANUELS   SLEUNAM
GUIDES   READING   SEDIUG
BOOKS   MATERIALS   SKOOB
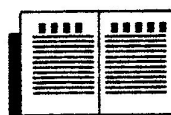
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ARCHIVE MASTER	**$ 52.84**
QL USER GUIDE	**$ 24.94**
INSIDE QDOS	**$ 52.84**

FRONT - ENDS

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QRAM	**$ 52.94**
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QTYP	**$ 63.19**

Spelling checker with a
40,000 word dictionary.

QPAC 1   **$ 38.45**
Use of "desktop" items:
clock, calendar, alarm
clock, calculator, and
typewriter.

TASK MASTER   **$ 43.95**

SPEEDSCREEN (EPROM)   **$ 62.45**
SPEEDSCREEN (MICROWAFER)   **$ 22.95**
LIGHTNING   **$ 45.94**
Both accelerate the QL text and screen operations
from 3 to 14 times faster. Lightning (available
soon on EPROM) also speeds up graphic and math
operations.

DESK-TOP PUBLISHING
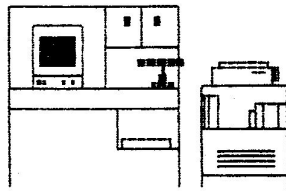
FRONT PAGE   **$ 34.44**
The most basic and easy to use. Designed for the unexpanded QL user in mind. This entire catalog was created using this program.

FRONT PAGE EXTRA III   **$ 40.19**
For QL's with expanded memory.

DESKTOP PUBLISHER   **$ 52.84**
DESKTOP PUBLISHER S.E.   **$ 91.94**
PROFESSIONAL PUBLISHER   **$218.44**
All three written by Digital Precision, Ltd. DTP S.E. and Pro. Publisher require disk drives, and extra RAM.

PAGE DESIGNER 2   **$ 68.94**
A rewritten public domain program from the QUANTA library. Allows the transfer (import/export) of ASCII files instead of bit-mapped graphics. All above programs will allow you to add pictures and graphics/icons into your text.

PASTE ART   **$ 21.79**
A disc full of pictures/icons to enhance your artistic talents when using one of the above desk-top publishers.

TELECOMMUNICATIONS
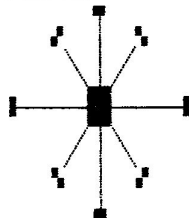
QLTERM   **$ 22.94**
Contains X-modem, phone listing, abilities to communicate via 300, 1200, 2400 baud rates. Built in help directory, capture buffer, etc. Screen handling controlled thru the use of "pipes". Documentation included as a Quill file.

Control Program for Microprocessors - CP/M
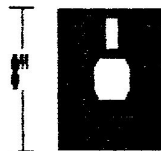
SUCCESS   **$ 68.94**
Allows the QL to run most CP/M software in any format. Must have addition memory and disc drives. Will work with microdrives or RAM disc. Use dBASE II, Mbasic, Wordstar, Turbo Pascal and more.

CP/Mulator   **$ 58.94**
Sandy's version for a CP/M emulator. It will work with Basic-80, Pascal MT+ and lots of other software.

LANGUAGES

QL PASCAL	**$ 57.44**
DIGITAL "C"	**$ 52.84**
DIGITAL "C" SPECIAL EDITION	**$ 68.94**
SUPER FORTH	**$ 57.44**
PRO FORTRAN 77	**$183.94**
MACRO ASSEMBLER	**$ 40.19**
ASSEMBLER WORKBENCH	**$ 45.94**

"A complete set of tools - everything you need to write, edit and debug programs written in Assembly code". Contains a full screen editor, an assembler, monitor and disassembler.

IDIS   **$ 34.44**
IDIS SPECIAL EDITION   **$ 45.94**
The best disassembler on the market for the QL. IDIS S.E. requires additional memory.

QMON II   **$ 45.94**
A monitor and debugger for the QL.

COMPILERS

TURBO BASIC   **$114.94**

SUPER-CHARGE SPECIAL EDITION   **$ 57.44**

QLIBERATOR V3.2   **$ 68.94**

QLIBERATOR BUDGET VERSION   **$ 45.94**
All these compilers will turn SuperBasic into fast running machine code. TURBO BASIC by far produces the fastest running code. TURBO BASIC comes with TURBO TOOLKIT, a toolkit utility in aiding with TURBO BASIC. SuperCharge and Qliberator are both excellent compilers. Qliberator will compile any BASIC program that runs without any modifications and corrects the code while compiling.

QLOAD QREF   **$ 28.69**
Will allow your BASIC programs the ability to load faster. A cross reference utility is included.

BETTER BASIC SYSTEM   **$ 28.69**
Cleans up code, correcting while running. Best to use this program before compiling programs for faster code. Can also be used as a stand alone program.

BASIC   **$ 80.44**
A SuperBasic to "C" converter. Will make it available for "C" compilation.

C.A.D.

3D PRECISION   **$ 68.94**
IMAGE 3D   **$ 34.44**
Both of these programs allow the user to create
3-D images. The user can zoom, pan and rotate
objects. 3D Precision requires additional
memory and can do more than one object at a
time.

EYE Q   **$ 40.19**
QL PEINTRE   **$ 34.44**
Both programs are graphic utilities capable of
producing superb color pictures. They allow for
rubber banding, ellipses, arc, box, text, etc.

PCB DESIGNER 2   **$ 91.94**
This program will allow you to create double
sided circuit boards up to 270mm x 150mm.
Must have at least a 512K RAM upgrade.

TECHNIQL   **$103.44**
TECHNIKIT   **$ 45.94**
TechniQL is a 2D CAD suitable for all general,
scientific and engineering applications. Create
finely detailed plans, diagrams and designs.
Technikit allows your own character set and has
TechniPLOT.

dataBASE...
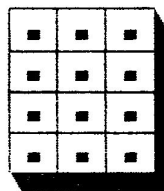
ARCHIVIST   **$ 45.94**
A user friendly database. One key entry
commands available. Will allow up to 10,000
records and is compatible with ARCHIVE files.

ARCHIVE RTM   **$ 34.44**
Archive Run-Time is a stripped down version of
ARCHIVE. It will speed ARCHIVE programs up to
3 times faster. Comes with Archive Development.

FLASHBACK   **$ 45.94**
A new concept in information storage and
retrieval on the QL. Sub record structure
options included, fully multi-tasking. By
the authors of TaskMaster and Spellbound.

QL EXTRAS...

MAILMERGE DELUXE   **$ 22.94**
Gives the ability to create form letters.
It will store names and addresses then print
them on a Quill format letter.

TAX-I-QL   **$ 21.79**
A template for ABACUS, the QL spreadsheet
program include with your QL. You can do all
of your taxes using this one program, all
schedules included in template. Need added RAM.

RECOVERIES
RECOVERIES
RECOVERIES
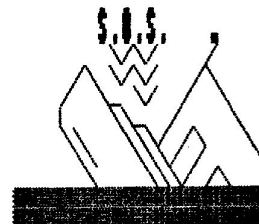
DATABASE RECOVERY   **$ 34.44**
Forgotten to close that ARCHIVE file? Is your
file corrupted? This program will help
retrieve most if not all of your file. Saves
on retyping all that data.

MEDIA MANAGER   **$ 45.94**
MEDIA MANAGER   **$ 68.94**
SPECIAL EDITION
Manages and controls discs and cartridges,
transfers from and to non-QL formats, recovers
corrupt and lost data. S.E. version reads and
writes to IBM and Atari discs.

CARTRIDGE DOCTOR   **$ 26.39**
Helps recover files from a "bad medium" micro-
wafer. Can even help if accidently deleted.

FINANCE
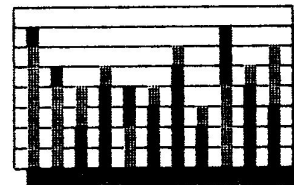
PACIOLI   **$ 40.19**
A home finance manager which keeps track of
income, expenses, interest, depriciation, tax,
bank statements, loans, etc.

SCREEN-DUMPS
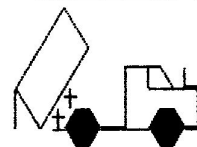
SCREEN DUMP   **$ 11.44**
ULTRA PRINT   **$ 34.44**
ULTRA PRINT will print screen displays in 24
sizes and desities. SCREEN DUMP and ULTRA PRINT
work on all epson compatable printers.

WRITE TURN   **$ 22.94**
SIDEWINDER DELUXE   **$ 40.19**
WriteTurn will allow you to print your spread-
sheets sideways. SIDEWINDER will do screen
dumps and allow printing sideways too.

GRAFIX   **$ 34.44**
Allows you to print all the desk-top publishers
to non-epson printers. It will also let you
print screen displays.

IMAGE PROCESSOR   **$ 28.69**
To give a polished look. Converts pictures
from mode 4 to mode 8 and back again. Recolor
or decolor, invert black to white to black.

ASTRONOMY

COSMOS $ 34.44

SUPER ASTROLOGER $ 34.44

PROFESSIONAL $ 80.44
ASTROLOGER

PROFESSIONAL $ 63.19
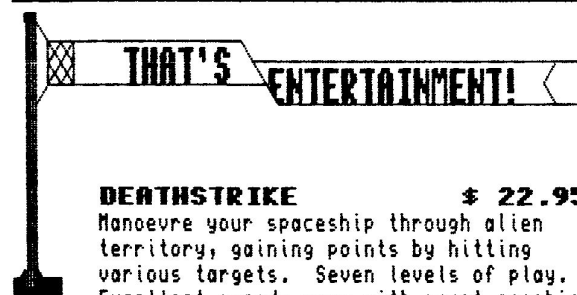ASTRONOMER
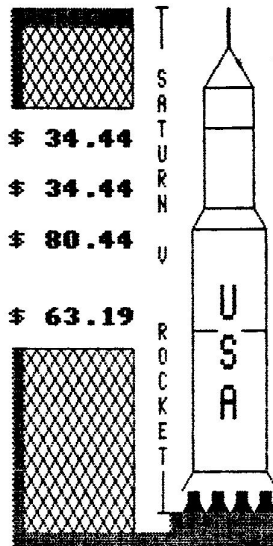
EXTRA EXTRA
SEE ALL ABOUT IT

OVERDRIVE $ 28.69
Now you can add graphic pictures and icons to
all QUILL files.

ADVENTURE

DARK SIDE OF MOON $ 34.44

WEST $ 26.39

ZKUL $ 26.39

THE PRAWN $ 28.69

THAT'S ENTERTAINMENT!

DEATHSTRIKE $ 22.95
Manoevre your spaceship through alien
territory, gaining points by hitting
various targets. Seven levels of play.
Excellent arcade game with great graphics

TANK BUSTERS $ 28.69
You drive a tank around a 3D landscape with
objects and tanks to fire at. QL World Magazine
says it it "great". Plays just like BATTLE ZONE.

TYPE 22 $ 34.44
A real-time simulation of a Navy 22 British
frigate. You are subject to attacts from air-
crafts, missles, submarines, and ships. Up to
20 targets at one time.

QL FLIGHT SIMULATOR $ 34.44
A flight simulator that provides 9 different
airport scenarios. Take off, land, refuel, and
fly around mountains and under bridges.

WANDERER 3D $ 34.44
The best 3D graphics program for the QL. You
wear 3D glasses to play. Must have an RGB
monitor.

QL CHESS $ 34.44
A stunning animated 3D view of the chess board
and pieces. Can play many levels. This was the
1984 World Computer Chess Champion.

BLOCKLANDS $ 22.94
DROIDZONE $ 22.94
Fast moving action shoot 'em up games for both
of the above.

SPOOK $ 22.94
The QL version of Pac-Man, only harder!

BRIDGE PLAYER II $ 28.69
MICROBRIDGE $ 45.94
Both are one player bridge games. MICROBRIDGE
requires additional memory and disc drives.

VROOM $ 28.69
A Grand Prix racing simulation.

KARATE $ 28.69
Many levels of play, and many different attack
positions. More than one enemy at the same time.

QL HOPPER $ 26.39
Based on the arcade game FROGGER.

THE KING $ 26.39
The classic style DONKEY KONG arcade.

GRID $ 22.94
A multi-player nuclear war simulation. For two
to ten players.

STRIP POKER $ 22.94

DRAGON HOLD $ 28.69
A graphic and text adventure game. Uses MODE 4.

KNIGHT FLIGHT $ 22.94
The arcade version of JOUST. Fly a bird around
and joust the enemy. Two player option.

BLAST BUGGY $ 22.94
Just like Moon Patrol, the arcade game.

CITADEL $ 22.95
Steer your craft though 50 screens of danger
and excitment. It can get rough!

3D SLIME $ 22.95
3D graphic maze. Excellent graphics!

SQUADRONS $ 34.44
Defend England from Air Raids during W.W.II.
This is NOT an arcade game but more of a
simulation of the real thing. Requires quick
thinking.

YAHTZEE $ 22.94

CRIBBAGE $ 22.94

OTHELLO 3D $ 28.69

MATCHPOINT TENNIS $ 32.14
A "Sinclair Classic". 3D tennis with 3 levels.

GALACTIC INVADERS	$ 22.94
SCRABBLE	$ 34.44

Both ol' time classic.

WAR IN THE EAST

A strategic war-game for 1 player versus the
computer. Every aspect of the war between
Germany and U.S.S.R. during W.W.II are covered:
  * weather
  * terrain
  * reinforcements
  * partisans, etc
Over 15 different types of divisions and
brigades. The map covers 5 full screens.
This program can come with 3 scenarios of:
  * 1941 - BARBAROSSA
  * 1942 - STALINGRAD
  * 1944 - DESTRUCTION OF ARMY GROUP CENTER
REQUIREMENTS: RGB monitor

SCENARIO I	$ 22.94
ALL SCENARIOS	$ 45.94

I.B.M. PC / CLONE SOFTWARE
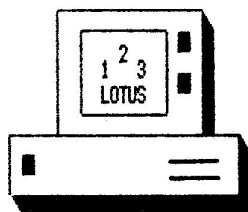
PSION PC FOUR	$114.94
PSION XCHANGE	$689.94

The PC FOUR exactly like the 4 Psion set for the
QL. If you don't want to learn new software for
the IBM PC, this is the way to go. XCHANGE is
an upgraded version which can be networked over
systems and many additional commands.

PSION PC CHESS	$ 68.94

Stunning 3D graphics. Twenty levels of play.
Fifty classic master games to study. This is
the World Microcomputer Chess Champion.

BROOKLYN BRIDGE	$114.94

Converts 5 1/4" discs to 3 1/2" discs. Allows
your desktop PC to linkup with a portable PC
and transfer your programs and data. This is
version 2.0.

DISCLOSURE / SALES POLICIES

Z88 CATALOG

Z88 COMPUTER	$450.00
32K RAM	$ 39.94
128K RAM	$ 94.94
512K RAM	$369.94
32K EPROM	$ 39.94
128K EPROM	$ 94.94
PC TO Z88 LINKUP	$ 69.94
QL TO Z88 LINKUP	$ 45.99
MAC TO Z88 LINKUP	$110.94
CARRYING CASE	$ 22.94
EPROM ERASER	$ 89.95
AC ADAPTER	$ 19.94
PORTABLE 1200 MODEM	$129.95
RS232 LEAD	$ 19.94
SERIAL TO PARALLEL I/F	$ 59.94
SPELLING MASTER	$119.94
WORDCHIP	$ 99.94
zBASE	$119.94
DATA ORGANISER	$ 79.94
SUPERCHIP	$199.94
Z TERM	$ 89.94
TOUCH TYPIST	$ 79.94
WITHERED TOAD	$ 45.94
SCRAZBLE	$ 45.94
Z88 COMPUTING BOOK	$ 19.94
USING YOUR Z88 BOOK	$ 24.94
Z88 DEVELOPERS' NOTES	$ 49.94
PORTABLE PRINTER	$399.94
PIPEDREAM FOR PC	$179.94
Z88 NEWSLETTER (7 ISSUES)	$ 24.95

The Sinclair QL

sinclair																		
F1	0	1	2	3	4	5	6	7	8	9	0	-	=	£	\			
F2	ALT	Q	W	E	R	T	Y	U	I	O	P	[	]					
F3	CAPS	A	S	D	F	G	H	J	K	L	;	"	ENT					
F4	SHIFT	Z	X	C	V	B	N	M	,	.	/	SHIFT					QL	
F5	CTRL	←	→					↑	↓	ALT								

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